industries should be referred to the National Board for Prices and Incomes, but the board has so far never dealt with air fares and thus has nothing yet to say.

BRITISH ASSOCIATION

Well Attended

from our Special Correspondent

Exeter, September 10

THE introduction of the £7 annual meeting fee by the British Association has evidently not kept devotees away from Exeter this year. Although some old faithfuls may have noted the expense with a little disgust, they have all paid up, and almost two thousand people arrived for the academic pomp and circumstance of the inaugural meeting on September 3—by all accounts the most impressive in living memory.

Of course, about twelve per cent of the two thousand were British Association Young Scientists, twelve to eighteen year olds able, for the first time, to attend the meeting as the equals of their elders. They have been very much in evidence at Exeter, apparently getting full value for their £1 15*s*, even if some of the science may have passed over their heads. At any rate, when Professor M. J. Lighthill gave the first Royal Society BAYS lecture, his spirited account of how fishes swim enthralled Lord Blackett and other notables, as well as the BAYS themselves.

Five lectures each year to be given by Fellows are the Royal Society's contribution to the inauguration of BAYS. Other, even more tangible, support has come in the form of £2,500 a year for three years from the International Publishing Corporation, £2,000 a year for seven years from Shell International Petroleum Co. and £1,000 a year for three years from ICI. Since its conception at Dundee, the BAYS organization has made rapid progress. There are now thirty branches throughout the United Kingdom, and the official estimate is that there are about three thousand BAYS altogether. They held their first national conference at Exeter, and after some heated argument agreed on twenty-five regions into which the branches will be grouped, and elected four representatives to sit on the headquarters BAYS committee under the chairmanship of Professor G. E. Fogg.

The success of BAYS is bound to be threatened by the BA's perennial financial problems. In 1969, costs ran to more than £5,000, and will increase in the future to the extent that a membership of 36,000 will be necessary if each member continues to pay 10*s* a year, with half of this going to headquarters to cover administrative costs. This will be a sure test of enthusiasm, and will provide plenty of headaches for Mr Terry Whodcoat, the BAYS officer, who seems to have established himself rapidly as a popular leader.

A meeting which inaugurates a whole new membership structure seems an appropriate time to stress the topical theme of innovation. After the exhortations of Sir Peter Medawar's presidential address, there was the much heralded symposium on inventiveness and innovation, intended to examine the problem of good British ideas that never bring any commercial return because the inventors are not backed up by the innovators. Many members of the large audience which gathered in the morning to hear case histories of several British inventions—float glass, polythene and others—had found other things to do by the afternoon. This left a hard core of dissatisfied inventors, would-be innovators and silent observers to enliven the panel discussion, and no new ideas seemed to emerge. But a lot of people had been exposed to the needs and potentiality of British innovation, and this could be augmented by a visit to Inovex, a fairly unexciting exhibition showing the history of some successful British developments such as hovercraft and natural gas.

When the annual meeting has a technological theme it is good to know that during the past year the association has spent the whole of its grant from the Ministry of Technology. The £10,000 carmarked for a programme designed to encourage interest in technological careers was not all used in 1967–68. But in 1968–69, as the latest annual report relates, a determined and successful effort to allocate all the money to the branches resulted in a total expenditure of £11,499, all of which Mintech kindly produced.

The BA has once more ended the year without a deficit, but the situation is far from happy, and it has again been necessary to reduce the funds for the branches and area committees; these were £3,975, compared with £13,203 in 1965–66. This makes the branches much more reliant on money raised locally, and obviously makes their situation a little more precarious. The association naturally hopes that the new membership structure and annual meeting fee will increase revenue so that, in the words of the treasurer, the association can remain in a sound (if not prosperous) state. The next, anxious, year will be presided over by Lord Todd, who takes over from Sir Peter Medawar at the end of the Exeter meeting, and in 1970–71 his successor, Sir Alexander Cairncross, will no doubt hope to see some of the fruits of the recent changes.

SPACE RESEARCH

Zond-7 Comes Back Softly

THE latest in the Soviet series of "Zond" lunar probes, Zond-7, is distinguished not so much for the experimental work which it carried out, much of which was of a routine nature, but for the fact that it was the first lunar probe to be successfully soft-landed in Soviet territory. It came down to the south of the town of Kustanai (Kazakhstan), well within the scheduled zone. The experimental work included photography of the Earth and of both faces of the Moon, and the testing of what are described in the reports as "improved" on-board systems—the flight control computer, astro-orientation system, telemetry systems and means of radiation shielding and radiation dosage measurement.

The soft landing system is said to be based on the use of a complex astro-orientation system and special on-board computer. Shortly before re-entry, a time-programmed device triggered off the separation of the re-entry capsule from the remainder of the craft. A special stabilization system then quenched the angular misalignments set up during the separation process and positioned the capsule at the correct angle of attack for re-entry. The now standard "dipping" technique was twice repeated to reduce the velocity from 11 km s^{-1} to 200 m s^{-1} by means of aerodynamic lift and frictional braking. At an altitude of 7·5 km,

a special altimeter operated the parachute system and, in the last stages of descent, actuated low-thrust landing motors, the use of which in conjunction with parachutes appears to be one of the most novel features of this member of the Zond series.

As a pointer to future Soviet space research, this new soft-landing technique would appear to indicate a continuation, at least for the present, of the tendency to base the more exploratory aspects of the space programme on the use of unmanned stations. In a recent interview between a *Pravda* reporter and the unnamed Deputy Chief of Construction of the Zond series, however, a slightly more ambivalent attitude is revealed. "In my opinion, very many problems of space research, including exploration of the Moon and planets, can unquestionably be solved by automatic means," the engineer said, but "purely human means of analysing unexpected situations in space, collecting information for which the sensors and automatic instruments were not designed, observing new phenomena not 'written in' to the programme of the automatic units, are of great assistance to the expansion of our knowledge of the planets and space." It would seem, therefore, that a mixed programme of automated and piloted spacecraft is envisaged. Judging by another recent *Pravda* article by N. Kozyrev, the establishment of a permanent lunar laboratory is included in the not-too-distant agenda.

CONSERVATION

Future of Lake Baikal

THE recent conference at Irkutsk on the future of Lake Baikal has once more brought into prominence both the uniqueness of Baikal as an ecological habitat and the special problems arising when the question of its future is discussed.

Baikal, the world's deepest lake (maximum depth 1,741 m) and the largest freshwater lake in the Eurasian landmass (area 31,500 sq. km), is perhaps best known for its unique freshwater seals; other, smaller characteristic fauna include the isopod *Asellus dybowskii*, the amphipods *Acanthogammarus grewigki*, *Macrochetopus* and *Brandtia lata*, the molluscs *Kobellocochlea martensiana* and *Liobaicalia stiedae*, and the fishes *Comephorus dybowskii* and *Cotinella boulengeri*. In all, there are more than a thousand varieties of flora and fauna unique to Lake Baikal.

The threat to Baikal as a wildlife habitat is two-fold: the industrial development of the lakeshore itself, and the extensive felling of trees in the regions bordering on the lake. The two threats are, in fact, connected, because the felled trees are processed in the wood-pulp and paper mills on the shores of the lake. For some time, all such mills have been compelled to use the most up to date water-purifying installations; however, data provided by research vessels of the Institute of Limnology of the Academy of Sciences of the USSR indicate that this purified effluent still constitutes a threat to wildlife. It also seems that no steps have so far been taken towards restricting the tree felling which has already denuded considerable areas of mountain slopes adjacent to the lake, leading to the partial or total drying up of many of the rivers and streams feeding the lake.

A further cause of concern, affecting the overall planning policy of the Soviet Union and not only the conservationists, is that Baikal is an enormous natural freshwater reservoir, holding, in fact, more water than all the rivers and other freshwater lakes of the Soviet Union combined. The problem of clean water and of fish production is causing increasing concern throughout the country. In 1968 alone, 510 purifying installations were erected on industrial complexes which had formerly been polluting fish producing areas, notably on the Dnieper, Desna, Don, Tom and Volga. The pollution of the basin of the Northern Dvina by the cellulose and paper industries is currently causing considerable discussion in the Soviet press. Lake and river fish are an important food resource throughout the Soviet Union and inland fishing is an important industry—a new technique of aerial spotting of shoals is at present being tested on Lake Aral (Uzbekistan). Lake Baikal is particularly noted for its reserves of omul' (*Coregonus autumnalis*, a member of the salmon family).

Earlier this year, therefore, the Soviet government passed a resolution on wildlife conservation in the Baikal area. The Irkutsk conference was called to discuss certain practical aspects of implementing this decision. One proposal would have more than half the basin declared a conservation zone, banning all industrial and similar activity on or near the lake. (It is not reported whether or not the whole of the lake would be included in the conservation zone, and if not, what industrial activity would be tolerated on the remaining portion of the lake shore.)

Another widely favoured proposal is the setting up of some kind of national park in the area because, it is felt, the scenic beauty of the area could attract many tourists. This combination of tourism and conservation has already been shown to work effectively in the Soviet Union, in the Byelovezhskaya Forest National Park (administered jointly by Poland and the Byelorussian SSR). Because of the remoteness of Baikal, however, any such development would involve the construction of hotels, camping sites, cable-ways and the like, which would represent some kind of compromise with the demands of the strict conservationists.

No definitive report from the conference has yet been published. It should be noted, however, that any decision to conserve is bound to have a considerable effect on Soviet industrial and economic planning. While the conference was taking place, the Soviet press was hailing the progress of the "giant" new Ust'-Ilimsk Hydro-Electric Station on the lower Angara (the major outlet of Lake Baikal) which is scheduled to come into service in 1973. The basin of the lower Angara is already an important industrial complex, and even if the alterations to the bed and flow of the Angara which the Ust'-Ilimsk project will introduce produce no direct physical effect on Baikal, the further industrialization of the Angara basin might well influence the outcome of the development-versus-conservation conflict regarding Lake Baikal.

OBJECTIVE TESTING

One More Unit

AN Educational Measurement Research Unit which is to be established at the University of Reading may go some way to meet the criticism that methods of